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**From:** MacNicholl, Peter@DTSC [Peter.MacNicholl@dtsc.ca.gov]  
**Sent:** 6/30/2017 7:19:36 PM  
**To:** Fennessy, Christopher (christopher.fennessy@Rocket.com) (christopher.fennessy@Rocket.com)  
[christopher.fennessy@Rocket.com]  
**CC:** Keller, Lynn [Keller.Lynn@epa.gov]; MacDonald, Alex@Waterboards [Alex.MacDonald@waterboards.ca.gov];  
Stralka, Daniel [Stralka.Daniel@epa.gov]; Plate, Mathew [Plate.Mathew@epa.gov]  
**Subject:** FW: Aerojet - RIS Report TCE Soil Gas Plume

Hi Chris,

Please see the below comments from Dan Gallagher in GSU. This feeds back into my previous email articulating the need for additional comprehensive sampling of Area 40 sub-surface soil vapor. DTSC's expectation is the submittal of a SAP and WP for the agencies review and comment, followed by immediate implementation by AR and its consultants.

Sincerely,



**Peter MacNicholl, P.E.**  
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**From:** Gallagher, Dan@DTSC  
**Sent:** Friday, June 30, 2017 11:57 AM  
**To:** MacNicholl, Peter@DTSC  
**Subject:** Aerojet - RIS Report TCE Soil Gas Plume

Peter,

I provide these preliminary comments on the soil gas plume as shown in the Remedial Investigation Supplement for Area 40, Island Operable Unit (OU-7) by CBI dated June 2016.

**Configuration of TCE as Shown in Figure 4.1-3**

The presentation of the soil gas plume is difficult to interpret based on the presentation of data in Figure 4.1-3. The following items are of concern.

1. Conceptual Site Model (CSM). The text states that contaminant sources are sumps and burn pits. Hence, the highest soil gas concentrations should be spatially coincident with the sources, and soil gas concentrations should decrease radially away from the source areas. This pattern of contaminant distribution is not apparent on the figure. Either the CSM warrants updating or some of the soil gas results on the figure are biased low. Due to these discrepancies and those additional items identified below, DTSC recommends further soil gas sampling in both the source area sumps and pits and areas radially outward for a more comprehensive delineation of contaminant

distributions. This new data will provide a more accurate and comprehensive delineation of the soil gas plume utilizing contemporary analytical methods. This data is necessary to revise the conceptual site model, determine potential health risks, evaluate soil vapor remedial alternatives. Also, this data will be used to support decisions on the appropriate reuse for the Site.

2. Soil Gas Sample Collection. As indicated by the figure, most of the data was collected in 1991. The 1991 data pre-dates regulatory soil gas sampling guidance. For example, the LARWQCB issued their first soil gas guidelines in 1997 and DTSC issued theirs in 2003. The intent of regulatory guidance is to provide a standardized approach for sample collection to alleviate potential field and laboratory bias. Were the 1991 samples subject leak detection protocols and shut-in testing? Also, were the laboratory analytical methods comparable to today's standards? Newer soil gas methods provide a more accurate, higher quality dataset than older methods. Accordingly, further sampling and delineation of the soil gas plume is warranted as indicated in the text above and below.

3. Sampling Location 37B-SP25. This soil gas location yielded some of the highest TCE concentrations but the location is approximately 250 feet from a source area. Sample location 37B-SP25 suggests an irregular contaminant distribution pattern. This anomalous data point further illustrates the need for additional soil gas sampling to address uncertainty in the CSM.

4. Vapor Intrusion. Understanding the limits of the TCE soil gas plume is important for vapor intrusion. The limits of the TCE soil gas are not displayed on the figure. Hence, "safe" areas for building locations cannot be ascertained. Likewise, plume areas subject to building mitigation cannot be determined either.

5. Plume Delineation. TCE in soil gas is not delineated to the west of sample 36B-SP37. Also, TCE is not delineated between samples 36B-SP25 and 38B-SP13.

#### **Draft California Vapor Intrusion Guidance**

DTSC is tentatively scheduled to post updated vapor intrusion guidance on our website on September 1, 2017. The guidance describes soil gas sampling recommendations and soil gas screening approaches for vapor intrusion. Some of the items applicable to the Aerojet project are as follows.

- Permanent soil gas probes are warranted at future building locations.
- Permanent soil gas probes should be sampled 3 to 4 times to evaluate temporal variability in advance of any residential development.
- Each soil gas probe should have at least two screened intervals.
- Soil gas contaminants should be evaluated using an attenuation factor of 0.03.
- When soil gas contaminants exceed a risk of 10<sup>-4</sup>, remediation, in addition to building mitigation, is warranted.

#### **Recommendation**

As illustrated above, further soil gas sampling is necessary for the delineation of the contaminant distributions in the sump areas, burn pits, and those locations radially outward. This higher quality data will be used to update and refine the CSM, identify related potential health risks, employ pertinent remedial alternatives, and be used to evaluate proposed reuse options for the Site.

Please feel free to forward this email to interested stakeholders. If needed, a GSU memorandum can be generated.

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